UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,458	04/20/2001	Paul F. Struhsaker	WEST14-00026	4832

7590 09/22/2004

William A. Munck, Esq.
NOVAKOV DAVIS & MUNCK, P.C.
900 Three Galleria Tower
13155 Noel Road
Dallas, TX 75240

EXAMINER	
HABTE, ZEWDU	

ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/839,458	STRUHSAKER ET AL.	
	Examiner	Art Unit	
	Zewdu Habte	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-15* is/are rejected.

7)☒ Claim(s) *8 and 16* is/are objected to.

8)☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the radio frequency (RF) modem self, the first RF modem, and the modulation controller must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

The term "more complex" in claims 4,5,12,15 are a relative term which renders the claim indefinite. The term "more complex" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead et al. (US 6704579B2) in view of Olofsson (US 6167031).

With regard to claim 1, Woodhead teaches a fixed wireless access network (Fig. 1@100) comprising a plurality of base stations (Fig. 2 @ 107) capable of bidirectional time division duplex (TDD)(col. 9, line 36, the network is capable of providing time division service for multiple customers utilizing time division duplexing) communication with wireless access devices (Fig. 1 @ 110) disposed at a plurality of subscriber

premises (Fig.1@102), a radio frequency (RF) modem shelf comprising: a first RF modem (although Woodhead does not mention an RF modem, it is inherently taught because a radio transmission of a base-band signal requires a band-pass modulation or demodulation and transmit or receive through an RF antenna; this process is performed in any base station as long as the base station is capable of transmitting or receiving RF signal) capable of communicating with a plurality of said wireless access devices (Fig. 1 @110) using TDD frames (Fig. 1 @ 100, col. 8, lines 47-49, the wireless communication system with a plurality of wireless access devices operates utilizing TDD), each TDD frame having an uplink for receiving data and a downlink for transmitting data (also, inherently taught because a frame in TDMA consists of a number of slots, and each frame is made up of a preamble, an information message, and tail bits; in TDMA/TDD, half of the time slots in the frame information message would be used for the uplink for receiving data and half would be used for a downlink for transmitting data). Woodhead does not mention a modulation controller, but Olofsson discloses modulation controller (Fig. 9 @118, selector) capable of determining an optimum modulation configuration for each of said plurality of wireless access devices communicating with said first RF modem (col. 12, line 34, a selector block selects an optimum combination of modulation and channel coding schemes on RF link; an RF link includes multiple physical channels). The modulation controller causes said first RF modem to transmit downlink data to a first wireless access device in a first data block having a first optimum modulation configuration (it is inherently taught because the need to have a selector is to provide different modulation schemes for a plurality of wireless devices in the network

since each device might require different modulation scheme to transmit downlink data, e.g. QPSK), and to transmit downlink data to a second wireless access device in a second data block having a different second optimum modulation configuration (it is inherently taught because the need to have a selector is to provide different modulation schemes for a plurality of wireless devices in the network since each device might require different modulation scheme to transmit downlink data, e.g. 16 QAM).It would have been obvious to one of ordinary skill in the art to combine Woodhead and Olofsson for the purpose of determining an optimum modulation controller to transmit data to a plurality of wireless access devices. The motivation is to select a type of modulation scheme for each wireless device according to its requirement.

With regard to claim 2, Olofsson teaches modulation controller (Fig. 9 @118, selector) determines said first and second optimum modulation configurations based on channel conditions associated with channels used to communicate with said first and second wireless access devices (col. 4, lines 61-65, modulation selector decides a modulation scheme for each RF link according to a measuring link quality parameter).

With regard to claim 3, Olofsson teaches first modulation configuration comprises a first modulation format and second modulation configuration comprises a different second modulation format (col. 12, lines 9-10, a first type of information are modulated using a first linear modulation scheme, and a second type of information are modulated using a second linear modulation scheme that uses a reduced signal set of the first modulation scheme).

With regard to claim 4, Olofsson teaches second modulation format is more complex than said first modulation format if channel conditions associated with a first channel used to communicate with said first wireless access device are noisier than channel conditions associated with a second channel used to communicate with said second wireless access device (col. 1, lines 38-42, for example, 16QAM scheme is used to represent the sixteen variation of four bits of data, on the other hand, a QPSK modulation scheme is used to represent the four variations of two bits of data; one is more complex than the other).

With regard to claim 5, Olofsson teaches first and second modulation formats comprise one of binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), and 16-quadrature amplitude modulation (QPSK) (col. 5 line 55).

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead and Olofsson as applied to claim 1 above, and further in view of Schramm (US006208663B1).

With regard to claim 6, Schramm teaches first modulation configuration comprises a first forward error correction code level and said second modulation configuration comprises a different second forward error correction code level (col. 5, line 52, two FEC coding schemes and one modulation scheme). It would have been obvious to one ordinary skill in the art to combine Woodhead and Olofsson with Schramm for the purpose of including a forward error correction scheme. The motivation is to have a modulation scheme, which is more resistant to noise, or any kind of interference.

With regard to claim 7, Schramm first error correction code level is more complex than said second error correction code level if channel conditions associated with a first channel used to communicate with said first wireless access device are noisier than channel conditions associated with a second channel used communicate with said second wireless access device (col. 3, lines 1-4, lower code rates provide grater error protection).

With regard to claim 9, Woodhead teaches a fixed wireless access network (Fig. 1@100) comprising a plurality of base stations (Fig. 2 @ 107) capable of bidirectional time division duplex (TDD)(col. 9, line 36, the network is capable of providing time division service for multiple customers utilizing time division duplexing) communication with wireless access devices (Fig. 1 @ 110) disposed at a plurality of subscriber premises (Fig.1@102), a radio frequency (RF) modem shelf comprising: a first RF modem (although Woodhead does not mention an RF modem, it is inherently taught because a radio transmission of a base-band signal requires a band-pass modulation or demodulation and transmit or receive through an RF antenna; this process is performed in any base station as long as the base station is capable of transmitting or receiving RF signal) capable of communicating with a plurality of said wireless access devices (Fig. 1 @110) using TDD frames (Fig. 1 @ 100, col. 8, lines 47-49, the wireless communication system with a plurality of wireless access devices operates utilizing TDD), each TDD frame having an uplink for receiving data and a downlink for transmitting data (also, inherently taught because a frame in TDMA consists of a number of slots, and each frame is made up of a preamble, an information message, and tail bits; in TDMA/TDD,

half of the time slots in the frame information message would be used for the uplink for receiving data and half would be used for a downlink for transmitting data). Woodhead does not mention a modulation controller, but Olofsson discloses modulation controller (Fig. 9 @118, selector) capable of determining an optimum modulation configuration for each of said plurality of wireless access devices communicating with said first RF modem (col. 12, line 34, a selector block selects an optimum combination of modulation and channel coding schemes on RF link; an RF link includes multiple physical channels). The modulation controller causes said first RF modem to transmit downlink data to a first wireless access device in a first data block having a first optimum modulation configuration (it is inherently taught because the need to have a selector is to provide different modulation schemes for a plurality of wireless devices in the network since each device might require different modulation scheme to transmit downlink data, e.g. QPSK), and to transmit downlink data to a second wireless access device in a second data block having a different second optimum modulation configuration (it is inherently taught because the need to have a selector is to provide different modulation schemes for a plurality of wireless devices in the network since each device might require different modulation scheme to transmit downlink data, e.g. 16 QAM).It would have been obvious to one of ordinary skill in the art to combine Woodhead and Olofsson for the purpose of determining an optimum modulation controller to transmit data to a plurality of wireless access devices. The motivation is to select a type of modulation scheme for each wireless device according to its requirement.

With regard to claim 10, Olofsson teaches modulation controller (Fig. 9 @118, selector) determines said first and second optimum modulation configurations based on channel conditions associated with channels used to communicate with said first and second wireless access devices (col. 4, lines 61-65, modulation selector decides a modulation scheme for each RF link according to a measuring link quality parameter).

With regard to claim 11, Olofsson teaches first modulation configuration comprises a first modulation format and second modulation configuration comprises a different second modulation format (col. 12, lines 9-10, a first type of information are modulated using a first linear modulation scheme, and a second type of information are modulated using a second linear modulation scheme that uses a reduced signal set of the first modulation scheme).

With regard to claim 12, Olofsson teaches second modulation format is more complex than said first modulation format if channel conditions associated with a first channel used to communicate with said first wireless access device are noisier than channel conditions associated with a second channel used to communicate with said second wireless access device (col. 1, lines 38-42, for example, 16QAM scheme is used to represent the sixteen variation of four bits of data, on the other hand, a QPSK modulation scheme is used to represent the four variations of two bits of data; one is more complex than the other).

With regard to claim 13, Olofsson teaches first and second modulation formats comprise one of binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), and 16-quadrature amplitude modulation (QPSK) (col. 5 line 55).

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead and Olofsson as applied to claim 1 above, and further in view of Schramm (US006208663B1).

With regard to claim 14, Schramm teaches first modulation configuration comprises a first forward error correction code level and said second modulation configuration comprises a different second forward error correction code level (col. 5, line 52, two FEC coding schemes and one modulation scheme). It would have been obvious to one ordinary skill in the art to combine Woodhead and Olofsson with Schramm for the purpose of including a forward error correction scheme. The motivation is to have a modulation scheme, which is more resistant to noise, or any kind of interference.

With regard to claim 15, Schramm first error correction code level is more complex than said second error correction code level if channel conditions associated with a first channel used to communicate with said first wireless access device are noisier than channel conditions associated with a second channel used communicate with said second wireless access device (col. 3, lines 1-4, lower code rates provide grater error protection).

Allowable Subject Matter

Claims 8 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zewdu Habte whose telephone number is 571-272-3115. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zewdu Habte
9/16/2004

KENNETH VANDERPUYE
PRIMARY EXAMINER